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GEOGRAPHICAL RECORD

AMERICAN GEOGRAPHICAL SOCIETY

THE LIBRARY. For some months, Dr. Randall-MacIver has been engaged in the classification and re-arrangement of the Society's book collections. This work, now completed, will greatly facilitate reference to any of the many thousands of volumes on the shelves. Works on regional geography are arranged by continents and their subdivisions. The various departments of our subject, such as physical, educational, economic and historical geography, etc., have each its own group of shelves. Government surveys and other official scientific publications form a group and are sub-classified by countries and topics. The publications of geographical and allied societies are arranged according to the languages in which they are printed. The general content of each stack section is lettered on the end of the stacks facing the central passageways. Nearly all the reference books are to be kept in the work rooms from which they may conveniently be distributed to consultants.

THE SOCIETY'S GEOGRAPHICAL COLLECTION. This collection, illustrating the best school material used for geographical education in Europe, has now been exhibited in many schools from the Atlantic to the Pacific coast during the past two years. The exhibition at Oberlin College has just closed and the collection has been ordered home to repair the wear and tear of handling by many thousands of visitors. Two or three exhibitions of it are likely to be given in this city, before it goes on the road again. Prof. George D. Hubbard of Oberlin writes that the map and atlas collection was very much enjoyed there, was continuously on exhibition for two months and was not only studied by students of Oberlin but was visited by many townspeople.

NORTH AMERICA

POPULATION OF CITIES IN THE UNITED STATES. The Bureau of the Census has just issued a *Bulletin* entitled: "Population: United States. Abstract of Statistics of the Number and Distribution of Inhabitants." Much of it has already been placed before the country, but considerable new data are given in Table 8, "Population of Cities in 1910, 25,000 inhabitants, or more, with per cent. of increase, 1890-1910." The following data relating to all the more important cities of the country are taken from this *Bulletin:*

CITY	POPULATION	
	1910	*1900*
ALABAMA		
Birmingham	132,685	38,415
Mobile	51,521	38,469
Montgomery	38,136	30,346
ARKANSAS		
Little Rock	45,941	38,307
CALIFORNIA		
Berkeley	40,434	13,214
Los Angeles	319,198	102,479
Oakland	150,174	66,960
Sacramento	44,696	29,282
San Diego	39,578	17,700
San Francisco	416,912	342,782
COLORADO		
Colorado Springs	29,078	21,085
Denver	213,381	133,859
Pueblo	44,395	28,157
CONNECTICUT		
Bridgeport	102,054	70,996
Hartford	98,915	79,850
Meriden City	27,265	24,296
New Britain	43,916	25,998
New Haven	133,605	108,027
Waterbury	73,141	45,859
DELAWARE		
Wilmington	87,411	76,508

CITY	POPULATION	
	1910	*1900*
DISTRICT OF COLUMBIA		
Washington	331,069	278,718
FLORIDA		
Jacksonville	57,699	28,429
Tampa	37,782	15,839
GEORGIA		
Atlanta	154,839	89,872
Augusta	41,040	39,441
Macon	40,665	23,272
Savannah	65,064	54,244
ILLINOIS		
Aurora	29,807	24,147
Chicago	2,185,283	1,698,575
Decatur	31,140	20,754
East St. Louis	58,547	29,655
Joliet	34,670	29,353
Peoria	66,950	56,100
Quincy	36,587	36,252
Rockford	45,401	31,051
Springfield	51,678	34,159
INDIANA		
Evansville	69,647	59,007
Fort Wayne	63,933	45,115
Indianapolis	233,650	169,164
South Bend	53,684	35,999
Terre Haute	58,157	36,673
IOWA		
Cedar Rapids	32,811	25,656
Council Bluffs	29,292	25,802
Davenport	43,028	35,254
Des Moines	86,368	62,139
Dubuque	38,494	36,297
Sioux City	47,828	33,111
KANSAS		
Kansas City	82,331	51,418
Topeka	43,684	33,608
Wichita	52,450	24,671
KENTUCKY		
Covington	53,270	42,938
Lexington	35,099	26,369
Louisville	223,928	204,731
Newport	30,309	28,301
LOUISIANA		
New Orleans	339,075	287,104
Shreveport	28,015	16,013
MAINE		
Lewiston	26,247	23,761
Portland	58,571	50,145
MARYLAND		
Baltimore	558,485	508,957
MASSACHUSETTS		
Boston	670,585	560,892
Brockton	56,878	40,063
Cambridge	104,839	91,886
Chelsea	32,452	34,072
Fall River	119,295	104,863
Haverhill	44,115	37,175
Holyoke	57,730	45,712
Lawrence	85,892	62,559
Lowell	106,294	94,969
Lynn	89,336	68.513
Malden	44,404	33,664
New Bedford	96,652	62,442
Salem	43,697	35,956
Somerville	77,236	61,643
Springfield	88,926	62,059
Worcester	145,986	118,421
MICHIGAN		
Bay City	45,166	27,628
Detroit	465,766	285,704
Grand Rapids	112,571	87,565
Kalamazoo	39,437	24,404
Lansing	31,229	16,485
Saginaw	50,510	42,345
MINNESOTA		
Duluth	78,466	52,969
Minneapolis	301,408	202,718
St. Paul	214,744	163,065
MISSOURI		
Kansas City	248,381	163,752
St. Joseph	77,403	102,979
St. Louis	687,029	575,238
MONTANA		
Butte	39,165	30,470
NEBRASKA		
Lincoln	43,973	40,169
Omaha	124,096	102,555
NEW HAMPSHIRE		
Manchester	70,063	56,987
Nashua	26,005	23,898
NEW JERSEY		
Atlantic City	46,150	27,838
Bayonne	55,545	32,722
Camden	94,538	75,935
Elizabeth	73,409	52,130
Hoboken	70,324	59,364
Jersey City	267,779	206,433
Newark	347,469	246,070
Paterson	125,600	105,171
Trenton	96,815	73,307
NEW YORK		
Albany	100,253	94,151
Binghamton	48,443	39,647
Buffalo	423,715	352,387
Elmira	37,176	35,672
Mount Vernon	30,919	21,228
New Rochelle	28,867	14,720
New York	4,766,883	3,437,202
Manhattan Borough	2,331,542	1,850,093
Bronx Borough	430,980	200,507
Brooklyn Borough	1,634,351	1,166,582
Queens Borough	284,041	152,999
Richmond Borough	85,969	67,021
Niagara Falls	30,445	19,457
Poughkeepsie	27,936	24,029
Rochester	218,149	162,608
Schenectady	72,826	31,682
Syracuse	137,249	108,374
Troy	76,813	60,651
Utica	74,419	56,382
Yonkers	79,803	47,931
NORTH CAROLINA		
Charlotte	34,014	18,091
Wilmington	25,748	20,976
OHIO		
Akron	69,067	42,728
Canton	50,217	30,667
Cincinnati	363,591	325,902
Cleveland	560,663	381,768
Columbus	181,511	125,560
Dayton	116,577	85,333
Springfield	46,921	38,253
Toledo	168,497	131,822
Youngstown	79,066	44,885
OKLAHOMA		
Muskogee	25,278	4,254
Oklahoma City	64,205	10,037

City	Population	
	1910	*1900*
OREGON		
Portland	207,214	90,426
PENNSYLVANIA		
Allentown	51,913	35,416
Altoona	52,127	38,973
Chester	38,537	33,988
Erie	66,525	52,733
Harrisburg	64,186	50,167
Johnstown	55,482	35,936
Lancaster	47,227	41,459
McKeesport	42,694	34,227
New Castle	36,280	28,339
Norristown	27,875	22,265
Philadelphia	1,549,008	1,293,697
Pittsburg	533,905	451,512
Reading	96,071	78,961
Scranton	129,867	102,026
Wilkes-Barre	67,105	51,721
York	44,750	33,708
RHODE ISLAND		
Newport	27,149	22,441
Pawtucket	51,622	39,231
Providence	224,326	175,597
Woonsocket	38,125	28,204
SOUTH CAROLINA		
Charleston	58,833	55,807
Columbia	26,319	21,108
TENNESSEE		
Chattanooga	44,604	30,154
Knoxville	36,346	32,637
Memphis	131,105	102,320
Nashville	110,364	80,865
TEXAS		
Austin	29,860	22,258
Dallas	92,104	42,638
El Paso	39,279	15,906
Fort Worth	73,312	26,688
Galveston	36,981	37,789
Houston	78,800	44,633
San Antonio	96,614	53,321
UTAH		
Salt Lake City	92,777	53,531
VIRGINIA		
Lynchburg	29,494	18,891
Norfolk	67,452	46,624
Richmond	127,628	85,050
Roanoke	34,874	21,495
WASHINGTON		
Seattle	237,194	80,671
Spokane	104,402	36,848
Tacoma	83,743	37,714
WEST VIRGINIA		
Huntington	31,161	11,923
Wheeling	41,641	38,878
WISCONSIN		
La Crosse	30,417	28,895
Madison	25,531	19,164
Milwaukee	373,857	285,315
Oshkosh	33,062	28,284
Racine	38,002	29,102
Superior	40,384	31,091

FROST PREVENTION IN NEVADA. The Department of Meteorology and Climatology of the University of Nevada, under the direction of Professors J. E. Church, Jr., and S. P. Fergusson, is carrying on an extended investigation of the conditions of frost occurrence and of the methods of frost prevention in Nevada. In connection with this work, a "temperature survey" of the valley lands of the State is being made, for the purpose of discovering districts thermally adapted for the raising of fruits. The results thus far obtained have been published recently (*Bull.* 79, Agric. Exp. Sta., Univ. of Nev., 1912), and much information of general value to fruit growers in other States also is given. This bulletin is intended "for the definite purpose of bringing conviction to the minds of Nevada fruit growers that fruit can be successfully grown even in seasons when frosts are persistent and destructive, and in places considered more unfavorable than any at present occupied by orchards." Experiments have shown that orchards in Nevada, even when the temperature falls as low as 22° F. and frosts occur persistently, can be protected during the season at an expense varying from seventy-three to ninety-five cents per tree. This estimate includes one-tenth of the original cost of the heaters with fifty per cent. added for depreciation and interest, but does not include possible expense for extra labor. In an orchard of 250 trees, the average expense for each of 13 heatings was 5.6 cents per tree.

Windbreaks of Russian oleasters, lopped poplars or willows and Lombardy poplars are a great help in economical and effective orchard heating, and are absolutely essential to success wherever the wind is strong. By means of recording thermometers, or a set of maximum and minimum thermometers, frost can be predicted with reasonable certainty. By using an automatic frost alarm, the exhaustion attendant upon "night watching" can be avoided. According to a temperature survey of the Truckee Meadows, and the climatological records of the Weather Bureau, the Humboldt, Truckee, Carson, Walker and Vegas Basins contain areas that can be adapted by orchard heating to the raising of fruit. R. DeC. Ward.

PRECIPITATION AND STREAM-FLOW OF THE OHIO RIVER AT CINCINNATI. Professor J. Warren Smith, of the U. S. Weather Bureau at Columbus, Ohio, has investigated "The Relation between the Precipitation over the Watershed of the Ohio River above and the Stream-Flow at Cincinnati" (*Bull.* No. 40, U. S. Weather Bureau, 1912). The period covered is 50 years, from 1861 to 1910, inclusive. The data are tabulated for each month of each year; for combinations of months for each year of the entire period; for each month of 10-year and 25-year groups of years. The conclusions reached are as follows, the author saying that these statements "are proven beyond dispute." There has been a very slight decrease in flood days in recent years, with the same rainfall. The same amount of rainfall causes a better flow of water in the river during the low-water period than formerly. The number of low-water days was 14 per cent. less during the past twenty-five years than during the preceding twenty-five, calculating for the same rainfall. During the ten years ending with 1910 the tendency for low water, with an equivalent rainfall, was not so great as for any preceding 10-year period for the past fifty years. Floods do not occur at Cincinnati during February and March unless the precipitation for these months is in excess of the normal, except on very rare occasions.

R. DeC. Ward.

THE FLORIDA KEYS: *Erratum.* In the article on the completion of the Florida East Coast R.R. by R. M. Harper in the February number of the *Bulletin,* Key Biscayne, southeast of Miami, was inadvertently stated (p. 90) to be the northernmost of the typical Florida keys. This designation applies to Soldier Key, about thirteen miles south of Miami in 25°35′ N. lat. and 80°10′ W. long. (cf. Coast and Geodetic Survey charts Nos. 165 and 166). Key Biscayne, on the contrary, is the southernmost of the sandy barrier beaches which fringe the east coast of Florida. Reference to this fact will be found in a discussion of the natural provinces of the state in a report by the above author in the Third Annual Report (for 1909-1910) of the Florida State Geological Survey (p. 229).

The most comprehensive account of the geology of the Florida Keys is that of Samuel Sanford in the Second Annual Report of the same survey (pp. 195-198, 214-221, 229-230), which gives many references to previous literature. Regarding the vegetation of the Florida Keys no complete description has ever been attempted, but short semi-popular papers on the subject have been published by A. H. Curtis in *Garden and Forest* for Aug. 8, 1888, and by Dr. J. K. Small in the *Journ. of the N. Y. Bot. Garden* for March, 1909, and July, 1911.

DR. JOCHELSON'S WORK IN THE ALEUTIAN ISLANDS. Among the many interesting papers to be presented to the eighteenth International Congress of Americanists, the account of the expedition of the Imperial Russian Geographical Society to Kamchatka and the Aleutian Islands, by Dr. Waldemar Jochelson, is specially worthy of note. The expedition, of which Dr. Jochelson was in charge of the ethnological section, was fitted out in 1908 at the expense of a Russian banker, M. F. P. Riobanschinsky. The expedition excavated thirteen ancient village sites and three burial caves, and explored shell-heaps and other kitchen-midden deposits of the Aleutian Islands. The collections brought back by the expedition included skeletons and skulls, and many prehistoric objects of stone and bone. In addition, much information as to the Aleutian language, folklore, and religion was secured. In 1910 the party crossed to Kamchatka, where old underground dwellings and fortifications were explored, and ancient pottery, the existence of which has been denied by former travelers, was found. The discoveries throw much light on the early relations of Kamchatka and Japan. Dr Jochelson will also discuss the morphological relations of the language of Kamchatka and of the American Indians, and the identities which he has discovered in their mythology and that of the Indians of the north-west. (*Nature, Vol. 89, 1912, No. 2221, p. 301*).

SOUTH AMERICA

GEOGRAPHICAL MATERIAL DESTROYED BY FIRE. In a fire at Rio de Janeiro, on Sept. 15th last, that destroyed the National Printing Establishment, the Instituto Historico e Geographico Brazileiro lost all the originals of the third volume specially devoted to the "Centenario da Imprensa no Brazil" and containing catalogues of newspapers published in many of the states of that republic. The originals of part 2 of Volume 73 of the *Revista,* being the number for 1910, were also lost. This volume was to contain, among others, an article entitled "Contribuicão para uma futura carta ou mappa do Estado de Minas Geraes" by Dr. Nelson de Senna.

AFRICA

GEOGRAPHICAL PROGRESS ON THE LIBYAN COAST. According to the *Rivista Geografica Italiana* for May, 1912, the Italian government steamer *Ciclope* has just completed a cruise from Tripoli to Tobruk on the North African coast. About 14,000 soundings were taken for the preparation of a chart of Tripoli harbor. The ship was subsequently detailed to an exploration of the coastal sea within the east-west limits given above. Dr. A. Manuelli was the chemist attached to the expedition, which Dr. A. Sella also accompanied as biologist. The results obtained in the course of this cruise will serve as a basis for the elaboration of a program of thalassic investigation in that region. On the other hand, work has begun in the nautical meteorologic station erected in Tripoli while the Bengazi observatory is being built under the supervision of the officials of the Royal Geographic Institute who will have charge of its work.

THE NATIVES OF THE KHARGA OASIS, EGYPT. The Smithsonian Institution has just issued a report under this title prepared by Dr. Ales Hrdlicka, curator of physical anthropology at the National Museum, who recently spent nearly four months at this oasis in the Libyan Desert collecting his material for the report. He was sent to Kharga by the Smithsonian Institution, the National Museum and the Metropolitan Museum of New York to study the physical characteristics of the natives. The oasis is about 130 miles west of Luxor and, owing to the isolation of its people, it was believed that they might be regarded as representing the old inhabitants of the region who probably settled there about 2000 B. C. Dr. Hrdlicka examined and measured only those showing normal development and apparently free from negro admixture. Out of a total population of about 10,000, including some Bedouans, he confined his studies to 150 individuals. He found that the type of the Kharga natives is radically distinct from that of the negro. It appears to be fundamentally the same as that of the non-negroid Egyptians of the Nile Valley, is a composite of closely related northeastern African and southwestern Asiatic ethnic elements, and is to be classed as part of the southern extension of the Mediterranean subdivision of the white race.

EUROPE

The Jungfrau Railroad. The recently completed stretch of the Jungfrau Railroad, between Eismeer and Jungfrau Joch, carries this greatest of all mountain roads far towards completion. The tunnel station of Eismeer (10,333 feet) was opened in June, 1907. The newly opened section, 2.8 miles in length, has a very steep grade, leads deeper into the mountain and reaches the tunnel station of Jungfrau Joch at an elevation of 11,304 feet. The remaining part of the railroad will be a cog line. At its final halting place the line will be 230 feet below the top of the mountain. (*Kartogr. und Schulgeogr. Zeitschr. No. 4, 1912*).

A Monument to J. Janssen. A Committee composed of distinguished men of science in many countries and under the presidency of M. H. Poincaré of the French Academy of Sciences has been organized to collect funds for the erection of a monument to J. Janssen, the founder of the observatory on the summit of Mont Blanc and at Meudon, and whose important contributions to physical astronomy are well known. It is designed to make the monument a work of art which will recall the eminent services rendered by Janssen to science. Societies and individuals in all countries are invited to send their contributions to the Treasurer of the Committee, Mr. M. H. Dehérain, Librarian of L'Institut de France.

POLAR

Antarctic

Wilkes's Work fully endorsed, at last, by a British authority. Dr. William S. Bruce, of Scotland, well known for his scientific explorations both in the Arctic and the Antarctic, has a paper "The Australasian Antarctic Expedition, 1911," in *The Scottish Geographical Magazine* (June, 1912, pp. 314-318), liberal quotations from which are here made:

"News has been received in this country of the successful landing of the Australasian Antarctic Expedition, under the leadership of Dr. D. Mawson, on Adelie Land. Unfortunately, just as the American discoveries by Johnson and Morrell in the Weddell Sea were discredited without much reason in Britain during the whole of last century, so also the American discoveries to the south of the Indian Ocean made by Wilkes were discredited not only in Britain but also in Europe generally.* Anyone, however, who has carefully read Captain Wilkes's narrative must have felt that there was sufficient evidence for the American discoveries, and the writer, for one, has always upheld the view that those lands would be found to exist more or less in the position in which Wilkes charted them . . . The Mawson Australasian expedition has proved, over a distance of more or less 1,200 miles, the existence of Wilkes Land, which has been disputed during the past seventy-two years, and has set up stations at the west, and almost at the east end of it. Dr. Mawson has therefore done much to support the theory of there being one continental land-mass round about the South Pole, and as a geologist, as well versed in Australian and Antarctic geology as any living man, he will be certain to bring back a rich harvest of valuable results bearing on the formation of Antarctica. His oceanographical survey between Antarctica and Australia will also be a most valuable contribution to Geography and biology, and the meteorological and magnetic observations cannot fail to be of economic worth."

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* It should be said that many continental geographers have, for years past, accepted the discoveries of Lieut. Wilkes and recorded them in their writings and on their maps.—Editor Bulletin.

From the reports sent home by Dr. Mawson, the Scottish explorer is able to make an excellent summary of the work thus far done by the Australasian expedition:

"No expedition has ventured during seventy-two years to approach this forbidding land again, until this courageous Australian launched forth, fully determined to make out what he could concerning it, and to endeavor to find what relationship it had to Victoria Land and the rest of the Antarctic Continent, as well as to Australia and New Zealand. Thus it was Mawson's plan to land three parties on this practically unknown coast, and he has, by successfully landing two parties, accomplished more than could have been hoped for by those who know. The coast was discovered by Captain d'Urville on Jan. 21, 1840, and was visited by Wilkes on Jan. 30 of the same year.* Dr. Mawson has himself landed with a party of fourteen at Point Alden, the eastern part of Adelie Land, where he has set up an encampment, and is at present spending the winter with the intention of carrying on meteorological, magnetic, geological and other scientific investigations, while exploring the land and seas in the vicinity from a topographical aspect. The reports meanwhile available give the most meager description of this interesting land, evidently because Dr. Mawson and his companions were entirely occupied in landing stores and equipment and setting up the house for winter quarters. The approach to Wilkes Land was made not without difficulty on account of fogs, snow and heavy gales. The ice-pack, also was not negotiated without difficulty. After leaving Macquarie Island and 'proceeding some days west-south-west', says Lieut. Mennis, 'we sighted a barrier very similar to the Ross Barrier, varying from forty to 100 feet in height, with an irregular edge running generally south. Afterwards, we passed rocky islets just off what appears to be the northern extremity of the southern ice-cap. On Jan. 9, while it was blowing a heavy gale, we sighted some more land jutting out from the barrier's edge, and we made for it. As there were numerous small islands and rocks just awash, and with the soundings showing a very irregular bottom, the ship was brought-to about two and a half miles out. As we were already further west than we had intended to make our main base, Dr. Mawson and I, with Bickerton and five others, lowered a whale boat and pulled in. We found the land to be the out-

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*"On the 19th of January, 1840, in longitude 154°30′ E., latitude 66°20′ S., Lieut. Charles Wilkes sighted, or believed that he sighted, land to the south. On the same day, in longitude 153°40′ E., latitude 66°31′ S., Lieut. Hudson also thought he saw land to the south. Other officers, among them Lieut. Alden, Gunner Williamson and Passed Midshipman Colvocoresses, made statements to the same effect. The American vessels sailed westward, and on the 22nd and 23d of January reported land again. They then continued their cruise to 97°37′ E., along this coast which Lieut. Wilkes named 'The Antarctic Continent,' and which has since justly been called Wilkes Land." (Edwin Swift Balch, *Bull. Amer. Geogr. Soc.*, *Vol. 38, 1906, p. 30.*)

crop from that covered by the ice-sheet, and composed of ice-worn rocks and loose boulders and moraine, about a mile long and half that depth, the highest point being about 200 feet.'

"At Point Alden, a fine boat harbor was found, and enough water for the ship to get within 200 yards, so Dr. Mawson decided to set up his first station at that point. The landing was not effected without difficulty, on account of very heavy gales and low temperature. The ice-cap in this region rises very rapidly up to about 2,000 feet, and the coast is described as a bad one, 'all heavily ice-clad and badly crevassed, fairly steep slope from about 2,000 feet, and finishing with a cliff face 100 to 300 feet. Occasionally we saw a rock in the face, but very seldom.'

"Having landed Dr. Mawson, Capt. Davis, who is master of the *Aurora,* proceeded to the westward in a more or less zig-zag course, along about the 65th degree of latitude, and about 250 miles to the westward, he discovered land rising to a height of 2,500 feet, very much of the same character as Adelie Land, but considerably further south than the land charted by Wilkes in these longitudes. It was impossible to get nearer than eighteen to twenty miles from this land on account of the close and heavy nature of the pack-ice. Consequently the *Aurora* steered a course westward, and ultimately landed a party under the leadership of Mr. Wild on about the Antarctic Circle, (66°21′ S.) in Long. 95°9′ W., 1,200 miles west of Dr. Mawson's station. It is interesting to note that this is the land, to which I have already referred, charted and called Termination Land by Captain Wilkes, whose existence has been doubted by others. It is therefore of extraordinary interest that the party of the Australasian expedition under Mr. Wild has not only confirmed Wilkes's discovery of Termination Land, but has actually landed and set up winter quarters there. The landing of this party was an even more remarkable accomplishment than the landing of Dr. Mawson's party. For one reason, it was fully a month later in the season, and was accomplished under most difficult circumstances, the stores having to be got up by means of shear-legs on to the top of a precipitous ice-cliff 100 feet high."

In landing on Termination Land, the party ascended a glacier which Mr. Wild says should eclipse the Beardmore, which Shackleton and Scott ascended, by at least fifty miles in length and fifty in width. Dr. Bruce adds that the oceanographical survey which the *Aurora* is carrying on between Australia and Wilkes Land closely resembles the work of the Scottish expedition, the special object being to make a deep-sea survey which shall indicate what previous continental connections there have been between Australia and this part of the Antarctic Continent.

AMERICAN DISCOVERERS OF THE ANTARCTIC CONTINENT. Major-General Greely, U. S. A., has an excellent paper with this title in the March number of the *National Geographic Magazine,* in which he summarizes the evidence that the original discovery of what is now known as West Antarctica was made by Nathaniel B. Palmer, of Stonington, Conn., in January, 1821. As Mr. Balch wrote in the *Bulletin* of our Society ("Stonington Antarctic Explorers", Vol. 41, 1909, pp. 473-492), Palmer, a little after his discovery, fell in with Captain Bellingshausen, commander of the Russian expedition then engaged in Antarctic explorations, and told him of the land he had found. Palmer's work was discredited in England and it has been affirmed there that the Russian captain made no reference in his book to his meeting with Palmer or to the latter's discovery; but Gen. Greely quotes from Henryk Arctowski, who said in a paper in the *Geographical Journal* (Vol. 18, 1901, pp. 353-394) that Bellingshausen did describe his meeting with Palmer in the second volume of his book, pp. 263, 264, published in 1831. It was this Russian explorer who named the part of West Antarctica which Palmer revealed, Palmer Land, and it appeared on the maps till the British replaced it by Graham Land in honor of the first Lord of the Admiralty. Palmer was the discoverer of West Antarctica, which is now believed to be a northerly projection of the Antarctic continent.

Much of General Greely's paper is given to Lieut. Wilkes's discovery of some 1,200 miles of Antarctica, his application of the name The Antarctic Continent to the great southern land mass and the campaign of abuse and detraction that was visited upon him for two generations by unfriendly critics on the other side of the Atlantic.

ECONOMIC GEOGRAPHY

WHALING IN SOUTHERN SEAS. The number of companies fishing for whale in 1912 in the south seas is about thirty-five in addition to the twenty companies in northern seas. Whales are most plentiful in southern waters around South Georgia, South Shetland, Kerguelen, and on the coasts of South America and Africa. They are decreasing in number in northern seas and the catches there made have been light in recent years.

Consul General Bartleman reports that in the Falkland Islands and their dependencies more than 8,000 whales were taken last season. Factories at South Georgia reported 5,000, and plants in the Falklands, South Shetlands, South Orkneys, Graham Land, and South Sandwich Group accounted for approximately 3,000. In the latter places there are about a dozen whaling companies, while in South Georgia alone there are seven such enterprises which employ over 1,000 men during the season. The 50 whalers owned by these companies are equipped with the most modern implements for catching, towing, and manipulating whales, and the large steam floating factories are fitted up with improved machinery and ingenious apparatus for extracting oil.

The January number of the *Revista Zootécnica,* Buenos Aires, contains an article on whaling which shows the numerous uses created for whale oil and other whale products that have led to a very profitable development of the whaling industry; notwithstanding the constantly increasing quantity of oil and whalebone, prices continue to rise. A Norwegian whaling company, operating in the Antarctic seas, recently paid dividends equal to 70 to 85 per cent. of the capital invested. The demand for whale products is so great that 75 per cent. of the catch for 1910 was sold in advance. A catch of one whale a week per vessel is considered very satisfactory.

The industry is of growing importance in Chile. The Corral Whaling Co., with headquarters at Corral, gives employment to 200 men. Two hundred whales is the average annual catch, from which 10,000 barrels of oil are extracted. The largest whale so far caught by this company measured 125 feet and yielded 100 barrels of oil. (*Daily Cons. and Trade Rep., No. 136, 1912.*)

PHYSICAL GEOGRAPHY

ORIGIN OF THE CENTERS OF ACTION OF THE ATMOSPHERE. The control of our daily weather conditions by the cyclonic and anticyclonic areas which appear on our weather maps is a very familiar matter to the large majority of the people of every civilized country. Further, the general principles upon which weather forecasting from day to day depends are also very widely known to be based on the characteristics, relations and movements of these same low and high pressure areas. In view of the importance of these local pressure conditions in controlling our daily weather changes, it is surprising that the importance of the control over weather and climate exercised by the much larger, so-called permanent areas of low and high pressure, over oceans and continents ("Centers of action"), has only very recently begun to be recognized. It is now becoming more and more clear that seasonal characteristics of our weather, and great characteristics of our climates, may often be traced back to special temporary peculiarities in the development, or position, of these permanent cyclones and anti-cyclones. Hence, every advance in our knowledge of the conditions affecting the latter is an important step toward long-range forecasts, and toward a better understanding of the climates of the world.

Dr. W. J. Humphreys, of the Mount Weather Observatory, in a recent study of "The Origin of the Permanent Ocean Highs" (*Bull. Mt. Wea. Obs.,* Vol. IV, Pt. I, 1911), finds that, in addition to the dynamic control of these highs, arising from the "thrusts" of the westerly winds toward the equator and the easterly winds toward the poles, there is a thermal control which has not received attention. The latter he believes to be due to the cold ocean currents which cross the zone of the highs, lower the air temperatures and thereby produce a higher pressure. The unsymmetrical location of the permanent ocean highs, toward the eastern sides of the oceans, is believed to be essentially due to the fact that the cold water is on that side. A maximum ocean high must, Dr. Humphreys concludes, be "at that place where the mechanical and thermal causes combine to produce the greatest result, that is, a little to the west of the intersection of the coldest portion of an ocean current with a high pressure belt." It may be added that Dr. Humphreys' emphasis on the control exercised by these cold currents gives rise to the suggestion that the conditions which determine, from year to year, stronger or weaker, colder or warmer currents, deserve careful study, if upon currents depend the ocean highs which, in their turn, control the winds and weather of distant lands.

In another paper in the same number of the *Bulletin of the Mount Weather Observatory,* on "The Aleutian and Icelandic Lows," Dr. Humphreys points out that the reason for the perpetual Icelandic low is the perpetual ice over the high regions of Greenland and Iceland, while the Aleutian low is a phenomenon of the winter only, owing to the high summer temperatures of Siberia and Alaska. R. DEC. WARD.

THUNDERSTORMS OVER TROPICAL ISLANDS. The frequent occurrence of thunderstorms over mountainous tropical islands is the natural result of the favorable opportunity for the development of local convectional currents, reinforced by the diurnal ascending winds which depend upon the topography. In a recent discussion of this subject (*Das Wetter,* April, 1912), Dr. Kurt Wegener brings out some interesting points in connection with the thunderstorms of the islands of Savaii and Upolu, of the Samoan group. Even during the dry season (the southern hemisphere winter) thunderstorms are of almost daily occurrence. The cumulus clouds are carried from the ocean towards the mountains in the forenoon; collect over these mountains, and grow into heavy cumulo-nimbus towards evening. These immense cloud masses, usually reaching a height of six miles, serve to indicate the position of the island to approaching vessels long before the highest mountains themselves can be seen from the ocean. The clouds extend further to leeward than to windward, but the rainfall is heavier on the windward slopes. This difference in rainfall, as well as the difference in sunshine, has a very noticeable effect upon the distribution of vegetation. The thunderstorm activity is far greater in the rainy season (summer) than in the dry season, when the trades blow.

Dr. Wegener's observations lead him to the view that the lightning in tropical thunderstorms is just as severe and strikes just as often as it does in extratropical thunderstorms, although the prevailing opinion is to the contrary. From a series of observations collected in the Samoan Islands it appears that lightning strikes there even oftener than it does in Germany. One cocoanut palm out of 200 is struck annually on Upolu and on Savaii. The inhabitants of the tropics live so often in the midst of tropical forests, or in plantations of cocoanut, cacao, rubber, and other trees, that the damage done to the tree tops attracts comparatively little attention. Moreover, in damp, tropical climates the trees, with the exception of the cocoanut palm, suffer comparatively little damage. The cocoanut palm, whose trunk is very dry, is frequently broken off just below the crown.

R. DEC. WARD.

LOW TEMPERATURES AND VEGETATION. Two recent papers by Forrest Shreve, of the Desert Botanical Laboratory of the Carnegie Institution, at Tucson, Ariz., deal with inversions of temperature, and with the duration of cold, and their effects upon the distribution of vegetation in the vicinity of the Laboratory. In "Cold Air Drainage" (*The Plant World,* XV, May, 1912, 110-11) the results of observations of minimum temperatures made from April to October, at altitudes of 4,000, 6,000 and 7,000 feet in the Santa Catalina Mountains, as well as of other related observations, are discussed. The general facts of temperature inversions are similar to those which have been determined for other localities, but they are very striking in this region of great aridity and of much clear sky. The "abrupt change of temperature at a particular level" was noticed when the observer returned to the bottom of the cañon after making the readings on the slopes, and this "level became higher as the evening advanced." In fact, "the floor of the cañon was filled with a veritable stream of cooled air with a very definite surface." The importance of this nocturnal distribution of temperature for vegetation is obvious. For example, in the locality under discussion, the minimum temperatures found on one of the ridges at 7,000 feet are found at only 4,650 feet in the cañon. The author has noted that a number of desert species range to a much higher altitude on ridges and the upper slopes of cañons than they do in the cañon bottoms and on the lower slopes. In the second paper, "The Influence of Low Temperatures on the Distribution of the Giant Cactus," the author discusses the relations which he has discovered between the duration of cold and the distribution of *Carnegia gigantea* (*Cereus giganteus*). It appears that the maximum number of consecutive hours of freezing is the most important climatic element in determining the northward range of this plant. The giant cactus is capable of withstanding nineteen hours of continued freezing temperatures, and a minimum as low as 17° Fahr., as shown by the temperature records at Yuma, Phœnix, Tucson and Flagstaff. An experimental study with a number of young potted giant cacti exposed to freezing temperatures (in freezers) confirmed these results. The plants which were exposed to from twenty-nine to forty-six hours of freezing were unable to withstand the cold, while those exposed for from six to fifteen hours survived. All this shows how important are detailed observations of temperature at different altitudes in studies of plant distribution. R. DeC. Ward.

Notes on North Atlantic Currents as deduced from the course of derelicts. In a recent contribution to the *Bulletin* de la Société de Géographie de Lyon (Vol. IV, Fasc. 1, 1911, p. 68) Mr. Hautreux deduces some interesting conclusions relating to the North Atlantic currents, based on a study of the course of derelicts as shown by the Pilot Charts of the U. S. Hydrographic Office. The writer says that the data obtained from the drift of derelicts are likely to throw more light on the movement of ocean currents than those gathered by means of sealed bottles. This is because the former are less subject to the influence of winds and extend deeper below the surface of the sea; also because passing steamers carefully note their position so that their itinerary can be plotted, while, on the other hand, only the original and final positions of drifting bottles are known. It appears from these notes that the currents known as the Canary Islands Current, the North Equatorial Current, and the Gulf Stream form a closed barrier around what is known as the Sargasso Sea. The Gulf Stream itself, after leaving Cape Hatteras, does not extend in a north-easterly direction towards Europe, as usually shown on maps, but takes instead an easterly course and heads for the Azores. After these islands are attained the current becomes affected by northerly winds and is deflected towards the south-east and the south. The warm currents along the Irish and Norwegian coasts are due to the prevalence of westerly or southwesterly winds and the consequent easterly set of the surface waters of the North Atlantic.

The course of derelicts reveals a current counter to the Gulf Stream. This hitherto unmapped body of water passes between Bermuda and the Bahamas, traveling in a southwesterly direction at a speed of from four to ten miles in twenty-four hours. The course and speed of these currents are exceedingly complex and wholly devoid of uniformity. Gusts of wind, and squalls cause them to deviate considerably from their normal course, sometimes bringing about stops or even retrogressions in direction. It also appears that the speed of these currents is largely in excess of that deduced from a study of the drift of sealed bottles. In the center of the North Atlantic, the drift of derelicts tends to show that their speed is four or five times greater than the rate of floating objects much smaller in size. The speed also varies according to the season of the year. Around the Sargasso Sea, it attains its maximum in summer and its minimum in winter. In the Gulf Stream it varies between ten and thirty miles a day with an average of eighteen miles. The North Equatorial Current travels at a speed of ten miles in winter and twenty in summer. It thus appears that the maximum speed is attained about the time the trade winds begin to shift towards the north. Leon Dominian.

PERSONAL

Captain Amundsen. On returning to Europe in September, Capt. Amundsen will make his first address before the Norwegian Geographical Society in Christiania. A few days later he will lecture before the Berlin Geographical Society and later in other cities in Germany, Austria and Switzerland. He will address the Royal Geographical Society in London on Nov. 18.

On April 16, the Storthing of Norway unanimously voted a grant of 136,365 kroner (about $36,818) to Captain Amundsen's North Polar Expedition.

F. V. EMERSON. Prof. F. V. Emerson of the University of Missouri is at work this season for the U. S. Soil Survey in the Ozarks of Missouri.

A. G. MADDREN. A. G. Maddren, of the Alaska Division of the U. S. Geological Survey, left Washington the last week in April bound for Seattle. He is on his way to the Upper Porcupine River, for the purpose of completing, during the coming summer, a geologic examination of the international boundary from the Porcupine to the Arctic coast.

J. B. TYRRELL. J. B. Tyrrell, of Toronto, is to head the Ontario Government Expedition to locate the five-mile strip on Hudson Bay which the province is to receive from the Dominion. His party, consisting of one or two surveyors and a half-dozen Indians, will probably proceed to Winnipeg the last of May, and thence by Lake Winnipeg to Port Nelson. A large part of five months will be spent along Hudson Bay. Mr. Tyrrell has personal knowledge of the Hudson Bay district, which will make his services of especial value. (*Economic Geology,* Vol. 7, 1912, p. 311.)

GENERAL

RECENT CENSUS RESULTS. The population of Servia, according to the census of Dec. 31, 1910, is 2,911,701, an increase of 8 per cent. since the census of 1905. The largest cities are Belgrade (89,876 inhabitants) and Nisch (24,949).

The population of the Commonwealth of Australia, according to the census of April 3, 1911, was 4,474,944, of whom 72,282 were colored or mixed breeds. The increase since the census of 1901 was 17.32 per cent. The distribution of the population was: New South Wales, 1,648,746; Victoria, 1,315,747; Queensland, 614,500; South Australia, 409,997; Western Australia, 288,483; Tasmania, 191,214; North Territory, 4,533.

The population of Algeria, according to the census of March 5, 1911, was 5,563,828, of whom 795,522 were Europeans. The increase since the census of 1906 was 7.9 per cent.

RESEARCH DEPARTMENT OF THE ROYAL GEOGRAPHICAL SOCIETY. The afternoon meetings that have been held for the discussion of research topics will no longer be regarded as departmental meetings but as meetings of the Society as a whole. In other words, this activity has been very successful and it has been decided to include it in the general work of the Society. *Nature* (May 30, 1912) says that at the last meeting of the Department, on May 23, the Chairman, Prof. Myres, pointed out that the important branches of study that had come under the purview of this section of the Society included new methods of surveying, problems of geomorphology (especially those effecting rivers and coasts), of hydrography and climatology, various regional and synthetical studies and investigations from the point of view of distribution, physical changes within historical times, and the exploration or investigation of particular territories with special regard to conditions affecting their settlement and economic development.